

WHAT IS CLAIMED IS:

1. Electronic equipment comprising:

a plurality of electronic apparatuses, each electronic apparatus having a semiconductor element;

a rack for storing the plurality of electronic apparatuses stacked with one above another;

in each of the electronic device, a first cooling device including a first heat receiver for receiving heat from the semiconductor element, a first fluid circulator for circulating a fluid through the first heat receiver, a first heat exchanger for discharging heat of the fluid, and a first piping for connecting the first heat receiver, the first fluid circulator, and the first heat exchanger; and

in the rack, a second cooling device including a second heat receiver in contact with the first heat receiver, a second fluid circulator for circulating the fluid through the second heat receiver, a second heat exchanger in contact with the second heat receiver, and a second piping for connecting the second heat receiver, the second fluid circulator, and the second heat exchanger.

2. Electronic equipment according to claim 1, wherein the first cooling device is detachably mounted on the rack, and wherein the second piping comprises a switching valve

for switching the supplying of the fluid to the second cooling device when the first cooling device is mounted to or demounted from the second piping.

3. Electronic equipment according to claim 1, wherein the direction of circulation of the fluid circulating in the first cooling device is different from the direction of circulation of the fluid circulating in the second cooling device.

4. Electronic equipment according to claim 1, wherein the diameter of the second piping becomes smaller from upstream to downstream in the circulation of the fluid.

5. Electronic equipment comprising, in a casing, an electronic module having a heat generator, a fluid circulator for circulating a cooling fluid, a heat exchanger for exchanging heat with the cooling fluid, a fan for blowing a cooling air to the heat exchanger, a cooling jacket which is integrally attached to the electronic module and has a passage of the cooling fluid therewithin, and a unit for detachably mounting the electronic module and the cooling jacket in as unitary body in the casing.

6. Electronic equipment according to claim 5, wherein

the electronic module and the cooling jacket integrally attached to the electronic module comprise an electrical connection unit and a hydraulic coupling unit, respectively, and wherein the electrical connection unit and the hydraulic coupling unit extend in the same direction.

7. Electronic equipment according to claim 6, wherein the electrical connection unit of the electronic module and the hydraulic coupling unit of the cooling jacket are placed adjacent to each other.

8. Electronic equipment according to claim 5, further comprising, in the casing, a mother wiring board for electrically connecting a plurality of electronic modules to the electronic equipment, and a header for hydraulically coupling a plurality of cooling jackets.

9. Electronic equipment according to claim 8, further comprising a fluid connector, which opens or closes the flow of the fluid by the insertion thereof or the removal thereof, serves as a hydraulic coupler between the cooling jacket and the header.

10. Electronic equipment comprising, in a casing, an electronic module having a heat generator, a fluid

circulator for circulating a cooling fluid, a heat exchanger for exchanging heat with the cooling fluid, a fan for blowing a cooling air to the heat exchanger, and a cooling jacket, arranged beforehand within the casing, having a passage of the cooling fluid therewithin, wherein the electronic module is designed to be integrally attached to the cooling jacket when the electronic module is mounted in the electronic equipment.

11. Electronic equipment according to claim 10, further comprising, in the casing, a mother wiring board for electrically connecting a plurality of electronic modules to the electronic equipment, and a header which is hydraulically coupled beforehand to a plurality of jackets.

12. A casing of electronic equipment comprising a detachably mounted electronic module having a heat generator and a cooling jacket integrally attached thereto, a fluid circulator for circulating a cooling fluid, a heat exchanger for exchanging heat with the cooling fluid, a fan for blowing a cooling air to the heat exchanger, a mother wiring board for electrically connecting the electronic module, and a header for hydraulically coupling the cooling jacket integrally attached to the electronic module.

13. A casing according to claim 12, wherein the header is hydraulically coupled to the fluid circulator of the cooling fluid.

14. A casing according to claim 12, wherein the header is disposed adjacent to an electronic connection unit of the electronic module.

15. A casing according to claim 12, further comprising a fluid connector, which opens or closes the flow of the fluid by the insertion thereof or the removal thereof, serves as a hydraulic coupler between the cooling jacket and the header.

16. A casing of electronic equipment comprising a detachably mounted electronic module having a heat generator, a fluid circulator for circulating a cooling fluid, a heat exchanger for exchanging heat with the cooling fluid, a fan for blowing a cooling air to the heat exchanger, a mother wiring board for electrically connecting the electronic module, and a cooling jacket which has a passage of the cooling fluid therewithin, and which is thermally coupled to the electronic module when the electronic module is mounted in the casing.

17. A casing according to claim 16, further comprising a header, wherein a plurality of cooling jackets are hydraulically coupled to the header.

18. An electronic module detachably mounted on electronic equipment, the electronic module comprising a board having a heat generator mounted on the surface thereof, and a cooling jacket which is integrally attached to the electronic module, is thermally coupled to the heat generator and has a passage of a cooling fluid therewithin.

19. An electronic module according to claim 18, further comprising an electrical connection unit for the electronic module and a hydraulic coupling unit for the cooling jacket wherein the electrical connection unit and the hydraulic coupling unit extend adjacent to each other in the same direction.

20. Electronic equipment comprising, in a casing, an electronic module having a heat generator, a fluid circulator for circulating a cooling fluid, a heat exchanger for exchanging heat with the cooling fluid, a fan for blowing a cooling air to the heat exchanger, a cooling jacket which includes a passage of the cooling fluid therewithin and is integrally attached to the electronic

module, and a unit for detachably mounting the electronic module having the cooling jacket integrally attached thereto in the casing.

21. Electronic equipment according to claim 20, wherein the electronic module and the cooling jacket integrally attached thereto have an electrical connection unit and a hydraulic coupling unit, respectively, and wherein the electrical connection unit and the hydraulic coupling unit extend in the same direction.

22. Electronic equipment according to claim 21, wherein the electrical connection unit of the electronic module and the hydraulic coupling unit of the cooling jacket are arranged adjacent to each other.

23. Electronic equipment according to claim 20, further comprising, in the casing, a mother wiring board for electrically connecting a plurality of electronic modules to the electronic equipment, and a header for hydraulically coupling a plurality of cooling jackets.

24. Electronic equipment according to claim 23, further comprising a fluid connector, which opens or closes the flow of the fluid by the insertion thereof or the removal thereof,

serves as a hydraulic coupler between the cooling jacket and the header.

25. Electronic equipment comprising, in a casing, an electronic module having a heat generator, a fluid circulator for circulating a cooling fluid, a heat exchanger for exchanging heat with the cooling fluid, a fan for blowing a cooling air to the heat exchanger, a cooling jacket which is mounted beforehand in the casing, and includes a passage of the cooling fluid therewithin, wherein the electronic module is integrally attached to the cooling jacket when the electronic module is mounted in the electronic equipment.

26. Electronic equipment according to claim 25, further comprising, in the casing, a mother wiring board for electrically connecting a plurality of electronic modules to the electronic equipment, and a header which is hydraulically coupled beforehand to a plurality of cooling jackets.

27. A casing of electronic equipment comprising a detachably electronic module having a heat generator and a cooling jacket integrally attached thereto, a fluid circulator for circulating a cooling fluid, a heat exchanger



for exchanging heat with the cooling fluid, a fan for blowing a cooling air to the heat exchanger, a mother wiring board for electrically connecting the electronic module, and a header for hydraulically coupling the cooling jacket integrally attached to the electronic module.

28. A casing according to claim 27, wherein the header is hydraulically coupled to the fluid circulator of the cooling fluid.

29. A casing according to claim 27, wherein the header is disposed adjacent to an electronic connection unit of the electronic module.

30. A casing according to claim 27, further comprising a fluid connector, which opens or closes the flow of the fluid by the insertion thereof or the removal thereof, serves as a hydraulic coupler between the cooling jacket and the header.

31. A casing of electronic equipment comprising a detachably mounted electronic module having a heat generator, a fluid circulator for circulating a cooling fluid, a heat exchanger for exchanging heat with the cooling fluid, a fan for blowing a cooling air to the heat exchanger, a mother

wiring board for electrically connecting the electronic module, and a cooling jacket which has a passage of the cooling fluid therewithin, and which is thermally coupled to the electronic module when the electronic module is mounted in the casing.

32. A casing according to claim 31, further comprising a header, wherein a plurality of cooling jackets are connected to the header.

33. An electronic module detachably mounted on electronic equipment, the electronic module comprising a board having a heat generator mounted on the surface thereof, and a cooling jacket which is integrally attached to the electronic module, is thermally coupled to the heat generator and has a passage of a cooling fluid therewithin.

34. An electronic module according to claim 33, further comprising an electrical connection unit for the electronic module and a hydraulic coupling unit for the cooling jacket wherein the electrical connection unit and the hydraulic coupling unit extend adjacent to each other in the same direction.